

CLAIMS

1. Oven (1) for heating foodstuff (28), in particular french fries (28), by means of hot air (22, 23) circulating in a substantially closed circle, wherein circulation of the air (22, 23) is forced, preferably by a fan or a blower (20),

5 characterised in that

the foodstuff (28) is contained in at least one receptacle (2) at least one or two of the walls (2a-2d) of which are penetrable to at least parts of the circulating hot air (22, 23),

10 that the receptacle (2) is at least partially enclosed towards its penetrable walls (2a-2d) by walls (4a-4d) of a container (4), wherein there is a spacing between at least one of the respective walls (2a-2d) of the receptacle and at least one of the walls (4a-4d) of the container (4),

15 that hot air (22) is entering the receptacle (2) and/or the container (4) preferably substantially from an upper side,

and that

in the region (12) into which the hot air (22) is entering the receptacle (2) and/or the container (4), a side wall (4a) of the container (4) is inclined with respect to a horizontal plane by a first angle (α) and a corresponding penetrable side wall (2a) of the receptacle (2) is inclined with respect to said horizontal plane by a second angle (β), wherein the first angle (α) is smaller than 90° and larger than the second angle (β).
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2. Oven (1) according to claim 1, characterised in that hot air (22) is entering the receptacle (2) and/or the container (4) substantially from a vertical direction perpendicular to said horizontal plane.
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3. Oven (1) according to any of the preceding claims, characterised in that said first angle (α) is about twice as large as said second angle (β).
4. Oven (1) according to any of the preceding claims, characterised in that the first angle (α) is smaller than 80° , preferentially smaller than 75° , even more preferentially in a range between 70 and 60° .
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5. Oven (1) according to any of the preceding claims, characterised in that the second angle (β) is smaller than 50° , preferentially smaller than 45° , even more preferentially in a range between 40 and 30° .
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6. Oven (1) according to any of the preceding claims, characterised in that the receptacle (2) has an opening towards its upper side, and in that preferentially all the side walls (2a, 2c, 2d) as well as the bottom wall (2b) are penetrable to the hot air.
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7. Oven (1) according to any of the preceding claims, characterised in that the receptacle (2) has walls (2a-2d) made of a grid or mesh, preferentially made of metal, wherein preferentially there is a horizontal bottom grid (2b), a vertical backside grid (2d) and two vertical side grids (2c) aligned substantially parallel to each other, as well as a tilted front grid (2a).
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8. Oven (1) according to claim 7, characterised in that the receptacle (2) furthermore comprises a horizontal grid portion (3) adjacent to the tilted front grid (2a) substantially in the plane of the opening towards the upper side of the receptacle (2).
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9. Oven (1) according to 1 of the claims 7 or 8, characterised in that the receptacle (2) furthermore comprises a nose (26) for keeping its bottom grid (2b) in a defined spacing from the bottom wall (4b) of the container (4), wherein preferentially the distance between the bottom grid (2b) and the bottom wall (4b) of the container (4) is more than 10 mm.
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10. Oven (1) according to any of the preceding claims, characterised in that the container (4) comprises a horizontal bottom wall (4b), a vertical backside wall (4d) and two vertical side walls (4c) aligned substantially parallel to each other, as well as a tilted front wall (4a), all of which are not penetrable to the hot air and which are preferentially made of coated or uncoated metal.
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11. Oven (1) according to one of the claims 7-9 as well as claim 10, characterised in that the receptacle (2) fits into the container (4) such that hot air (22) entering the container (4) and/or the receptacle (2) at least partially passes a horizontal grid portion (3) which is part of the receptacle (2), which is preferentially aligned adjacent to the tilted side grid (2a) of the receptacle (2).
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12. Oven (1) according to any of the preceding claims, characterised in that there is a slidable insert (16) into which the receptacle (4) and/or the container (2) is/are inserted, and which can be shifted into the oven (1) and thus into the stream of hot air of the oven (1).
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13. Oven (1) according to any of the preceding claims, characterised in that heating of the air takes place in a heating cavity (8) located upstream of the fan (20).
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14. Oven (1) according to any of the preceding claims, characterised in that hot air is entering the receptacle (2) and/or the container (4) from an upper side,

preferentially in a substantially vertical direction, in that after having passed through the foodstuff (28) and thus having heated the foodstuff (28) is guided upwards and exits the receptacle (2) and/or the container (4) on its upper side, preferentially in a substantially vertical direction, and in that heating as well as the driving of the circulation (20) takes place in a portion of the oven located above the receptacle (2) and/or the container (4).

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15. Oven (1) according to any of the preceding claims, characterised in that substantially immediately upstream of the section for heating the hot air (8) and/or substantially immediately upstream of the receptacle (2) and/or the container (4) there is provided filtering means (24, 25) for the air (22, 23), wherein preferentially said filtering means are mesh-like structures made of metal or synthetic material, preferably additionally retaining condensed water present in the circulating hot air.

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16. Oven (1) according to claim 15, characterised in that the filtering means (24, 25) can be fixed by means of magnets, and/or the filtering means (24, 25) are provided with indication means for indicating required changing, preferably in the form of a colour change of pressure loss sensor.

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17. Oven (1) according to one of claims 15 or 16, characterised in that the filtering means are a semipermeable membrane permeable to air and steam but not to condensed water.

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18. Oven (1) according to any of the preceding claims, characterised in that the receptacle (2) is designed to take up one portion of french fries to be heated within a timespan of in the range or less than one minute.

19. Oven (1) according to any of the preceding claims, characterised in that it is further provided with heating means based on microwave and/or on steamers.
20. Oven (1) according to any of the preceding claims, characterised in that it is provided with means for moving the foodstuff (28) in the receptacle (2) while the heating takes place, wherein preferably such means involve high-frequency or ultrasonic vibration.
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21. Oven (1) according to any of the preceding claims, characterised in that automatic temperature control means (27) are provided to ensure a desired temperature profile during a heating cycle and/or for ensuring security requirements.
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22. Oven (1) according to any of the preceding claims, characterised in that it is provided with identification means to prevent a user from inserting prohibited foodstuff into the machine and/or for automatic control of the heating cycle (temperature profile, a length etc.) based on the quantity and the type of the foodstuff.
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23. Oven (1) according to any of the preceding claims, characterised in that means of absorbing excess fats and odours are provided, such as active elements like charcoal, positioned at any convenient position in the air circulation path within the oven.
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24. Oven (1) according to any of the preceding claims, characterised in that all or parts of the receptacle (2) and/or the container (4) are made of or aligned with a disposable element in order to reduce and/or eliminate the need for cleaning.
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25. Oven (1) according to any of the preceding claims, characterised in that the

circulating airflow is pulsed through the use of some dynamic element within the airflow system, wherein such dynamic element is preferably a flap valve and/or rotating element containing both open and close to portion to successively prevent and allow the flow of air.

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26. Oven (1) according to any of the preceding claims, characterised in that swirl generators are provided in the air path in order to increase turbulence and heating effect of the foodstuff, wherein preferably the swirl generators are given by static vanes positioned at the location (22) were hot air is entering the food area.

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27. Oven (1) according to any of the preceding claims, characterised in that means are provided to prevent users from opening the machine during a heating cycle.

- 15 28. Oven (1) according to any of the preceding claims, characterised in that means are provided for introducing additional flavourings to influence the taste of the foodstuff during the heating cycle.

- 20 29. Oven (1) according to any of the preceding claims, characterised in that the receptacle (2) comprises multiple cavities enabling the heating of multiple foodstuff types without cross-contamination of one type to another.

- 25 30. Method for heating foodstuff (28) by means of a hot air (22, 23) in a substantially closed circle, preferably using an oven (1) according to any of the preceding claims, characterised in that the circulating hot air is heated to a temperature in the range of 180-250° centigrade, preferably in the range of 195-205°, preferentially heating a portion of french fries within a timespan of in the range of one minute.

- 31 . Method according to claim 30, characterised in that during the heating process the foodstuff is not substantially moving within the receptacle (2).
- 5 32 . Method according to claim 30 or claim 31, characterised in that the heating process is initiated after having read a barcode provided on the package of the foodstuff (28) to be heated, preferentially indicating particular heating conditions adapted to the foodstuff (28) contained in the package.
- 10 33. Method according to one of claims 30-32, characterised in that the circulated air is pulsating.